

## CLAIMS

What is claimed is:

1           1.       A method for mixed-mode execution, comprising of a higher-level mode  
2       of execution and a lower-level mode of execution, in object-oriented programs, where  
3       said higher-level mode of execution has components that are executed by said lower-level  
4       mode of execution and where it is possible to add new objects to a running program at  
5       said lower-level mode of execution, said method comprising of techniques for:

6                   accessing/updating memory located in said lower-level mode of execution  
7       by code in said higher-level mode of execution;

8                   transferring control from said lower-level mode of execution to said  
9       higher-level mode of execution; and

10                  transferring control from said higher-level mode of execution to said  
11       lower-level mode of execution.

1           2.       A method according to claim 1 wherein said new objects are  
2       specializations of existing objects with the ability to interact with said higher-level mode  
3       of execution through bridge methods in said lower-level mode of execution.

1           3.       A method according to claim 1 wherein said bridge methods have the  
2       ability to access or modify said memory.

1           4.       A method according to claim 1 wherein said bridge methods call methods  
2   in said higher-level mode of execution.

1           5.       A method according to claim 1 wherein said bridge methods call  
2   constructors in said higher-level mode of execution.

1           6.       A method according to claim 1 wherein compilation of said lower-level  
2   mode of execution allows said lower-level mode of execution to invoke said bridge  
3   methods at predetermined locations.

1           7.       A method according to claim 1 wherein control is transferred from said  
2   higher-level mode of execution to said lower-level mode of execution at method  
3   boundaries.

1           8.       A method according to claim 1 wherein control is transferred from said  
2   higher-level mode of execution to said lower-level mode of execution within said  
3   methods.

1           9.       A method according to claim 8 to transfer local state of said methods  
2   during said transfer of control from said higher-level mode of execution to said lower-  
3   level mode of execution within said methods.

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